

- the following type of assembly: (1) a tube, (2) a multiple tube assembly, or (3) a multiple connected conduits; or conduits with heat conductive fins positioned within one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, (3) a multiple connected conduits, or (4) a multi-void block;
- (c) changing the pressure applied to said heat temperature raising medium from said first pressure to a second pressure;
 - (d) transferring heat via the latent heat of fusion from said heat temperature raising medium to the second heat carrying medium to form second heat carrying medium vapor; whereby the temperature of the second heat carrying medium is higher than the temperature of the first heat carrying medium;
 - (e) transferring the latent heat of the vapor of the second heat carrying medium to the a heat sink whereby the temperature of the heat sink is higher than temperature in said heat source.

29. A method for transferring heat from a heat source to a heat sink where the temperature of the heat sink is higher than the temperature of the heat source, comprising the steps of:

- (a) formation of heat carrying medium vapor by direct or indirect contact method between the heat carrying medium and the heat source, whereby the temperature of the heat exchange is above the melting point of the material of heat source;
- (b) transferring the heat from the heat carrying medium vapor to the heat temperature raising medium contained within conduit assembly, whereby the conduit is made from one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, (3) a multiple connected conduits or (4) a multi-void block; or conduits with heat

conductive fins positioned within one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, (3) a multiple connected conduits, or (4) a multi-void block;

- (c) changing the pressure applied to said heat temperature raising medium from said first pressure to a second pressure;
- (d) transferring heat via the latent heat of fusion from said heat temperature raising medium to the second heat carrying medium to form second heat carrying medium vapor; whereby the temperature of the second heat carrying medium is higher than the temperature of the first heat carrying medium;
- (e) transferring the latent heat of the vapor of the second heat carrying medium to the a heat sink whereby the temperature of the heat sink is higher than temperature in said heat source.

30. A method for transferring heat from a heat source to a heat sink where the temperature of the heat sink is higher than the temperature of the heat source, comprising the steps of:

- (a) formation of heat carrying medium vapor by direct or indirect contact method between the heat carrying medium and the heat source;
- (b) transferring the heat from the heat carrying medium vapor to the heat temperature raising medium contained within conduit assembly, whereby the conduit is made from one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, (3) a multiple connected conduits or (4) a multi-void block; or conduits with heat conductive fins positioned within one of the following type of assembly: (1) a tube,

- (2) a multiple tube assembly, (3) a multiple connected conduits, or (4) a multi-void block;
- (c) changing the pressure applied to said heat temperature raising medium from said first pressure to a second pressure;
- (d) transferring heat via the latent heat of fusion from said heat temperature raising medium to the second heat carrying medium to form second heat carrying medium vapor; whereby the temperature of the second heat carrying medium is higher than the temperature of the first heat carrying medium;
- (e) transferring the latent heat of vapor of the second heat carrying medium to the a heat sink where the temperature of the heat sink is higher than temperature in said heat source; whereby the temperature of the heat sink is above the melting point of the material of the heat sink.

31. A process for purification of process substance, comprising the steps of:

- (a) formation of heat carrying medium vapor and solid substance of the process feed by direct or indirect contact method between the heat carrying medium and the heat source;
- (b) the partially solid process substance from the solidification of the water or the chemical feeds is sent to the washing or separation process for separating the mother liquid and the solid substance; whereby the said process is either by washing or draining method;
- (c) transferring the heat from a heat source via a vapor of the first heat carrying medium passing through a valve mean to the conduit, whereby the conduit is one of the following type of assembly; (1) tube, (2) a multiple tube assembly, (3) multiple

- connected conduit assembly, or (4) multi-void block or conduits with heat conductive fins positioned within one of the following type of assembly: (1) tube, (2) a multiple tube assembly, (3) multiple connected conduit assembly, or (4) multi-void block;
- (d) the heat is further transferred into the heat temperature raising medium inside of the conduit, whereby the heat temperature raising medium to undergoing a phase change from solid to liquid;
 - (e) changing the pressure applied to said heat temperature raising medium from said first pressure to a second pressure;
 - (f) transferring heat via a latent heat of fusion from said heat temperature raising medium out of the conduit to the second heat carrying medium whereby the second heat carrying medium will at least partially vaporize while the heat temperature raising medium will at least partial solidify;
 - (g) the second heat carrying medium vapor will pass through another valve mean to transfer the latent heat of the vapor of the second heat carrying medium to the heat sink whereby the temperature of the heat sink is higher than temperature in said heat source;
 - (h) the washed solid from the washing zone is brought into direct or indirect contact with the second heat carrying medium, thereby simultaneously condensing the second heat carrying medium and melting the solid process substance.

32. A method as claimed in Claim 28, 29, 30, or 31 wherein the step of transferring heat from a heat source via a first heat carrying medium to the heat temperature raising medium contained within an assembly, which comprises the first heat carrying medium to the heat temperature raising medium to undergoes a partial or complete phase change from vapor to

liquid or solid, and said heat temperature raising medium undergoes a partial or complete phase change from solid to liquid; and

wherein said step of transferring heat via a latent heat of fusion from said heat temperature raising medium to a heat sink comprises transferring sufficient heat from said heat temperature raising medium to said second heat carrying medium, such that said second heat carrying medium is at least partially vaporized and said heat temperature raising medium is at least partially solidified.

33. A method as claimed in Claim 32, wherein at least partially vaporizing the first heat carrying medium by one of the following method (a) an indirect contact heat exchange between the heat carrying medium and a heat source, (b) a flash vaporization of the heat carrying medium thereby producing a chilled liquid of the heat carrying medium, or (c) by using a vapor from a last effect of a multi-effect evaporator as the first heat carrying medium vapor.

34. A method as claimed in Claim 31, wherein at least partially vaporizing the first heat carrying medium by one of the following method (a) an indirect contact heat exchange between the heat carrying medium and a heat source, (b) a flash vaporization of the heat carrying medium thereby producing a chilled liquid of the heat carrying medium, (c) a simultaneous vaporization and freezing operation thereby producing a mass of solid process substance from the chemical feeds or (d) by using a vapor from a last effect of a multi-effect evaporator as the first heat carrying medium vapor.

35. A method as claimed in Claim 34, wherein a partially solid process substance from the solidification of the water or the chemical feeds is sent to wash and brought into a heat

exchange relation with the second heat carrying medium, thereby simultaneously melting the solid process substance and condensing the second heat carrying medium.

36. A method as claimed in Claim 28, 29, 30, or 31 wherein the heat temperature raising medium is selected from the group consisting of an organic or inorganic chemical, and mixtures thereof, either in a pure form or in a compound with a melting point range between -30°C and 100°C , with the proviso that when the heat temperature raising medium is selected from a mixture of compounds, the mixture has a eutectic point range between -30°C and 100°C .

37. A method as claimed in Claim 28, 29, 30, or 31 wherein the step of transferring heat from a heat source via a first heat carrying medium to a heat sink comprises a multiple units of heat temperature raisers to elevate temperature of the heat carrying medium by multiple steps.

38. A method as claimed in Claim 28, 29, or 30, wherein said process is used in air-conditioning, distillative freezing, ice making, cable water purification, waste water treatment, desalination, distillation operation under ambient temperature or high temperature, organic chemical purification and separation, or in any other process requiring the use of raising the temperature from a lower temperature heat source to a high temperature heat sink.

39. A method as claimed in Claim 29, wherein said process is used in air-conditioning, cable water purification, waste water treatment, desalination, distillation operation under ambient temperature or high temperature, organic chemical purification and separation, or in any other process requiring the use of raising the temperature from a lower temperature heat source to a high temperature heat sink where the temperature of the heat source is above the melting point of the material of the heat source.

40. A method as claimed in Claim 29, or 30, wherein for transferring heat from a heat source to a heat sink where the temperature of the heat sink is higher than the temperature of the heat source, comprising the steps of:

- (a) formation of heat carrying medium vapor by direct or indirect contact method between the heat carrying medium and the heat source;
- (b) transferring the heat from a heat source via a vapor of the first heat carrying medium passing through a valve mean to the conduit, whereby the conduit is one of the following type of assembly; (1) tube, (2) a multiple tube assembly, (3) multiple connected conduit assembly, or (4) multi-void block or conduits with heat conductive fins positioned within one of the following type of assembly: (1) tube, (2) a multiple tube assembly, (3) multiple connected conduit assembly, or (4) multi-void block;
- (c) the heat is further transferred into the heat temperature raising medium inside of the conduit, whereby the heat temperature raising medium to undergoing a phase change from solid to liquid;
- (e) changing the pressure applied to said heat temperature raising medium from said first pressure to a second pressure;
- (f) transferring heat via a latent heat of fusion from said heat temperature raising medium out of the conduit to the second heat carrying medium whereby the second heat carrying medium will at least partially vaporize while the heat temperature raising medium will at least partial solidify;
- (g) the second heat carrying medium vapor will pass through another valve mean to transfer the latent heat of the vapor of the second heat carrying medium to the heat

sink where the temperature of the heat sink is higher than the temperature of the heat source.

41. A method as claimed in Claim 31 or 40, wherein the valve means is the gate made of screen or mesh for structure support and thin film flaps for one way vapor passages.

42. A method as claimed in Claim 30, wherein the heat of the second vapor is at least partially released to the heat sink, whereby the material of the heat sink is one of the following:
(a) air, (b) cool water, (c) salt water, (d) water/evaporation.

43. A method of Claim 32, wherein the first heat carrying medium is selected from water, organic chemicals, or inorganic chemicals.

44. An apparatus of heat temperature raiser consists the following:

- (a) heat temperature raising medium is contained within the conduit; whereby the conduit is made from one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, or (3) a multiple connected conduits; or conduits with heat conductive fins positioned within one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, (3) a multiple connected conduits, or (4) a multi-void block;
- (b) a pressurizing device is connected on to the conduit to form the heat temperature raiser;
- (c) the pressure inside of the heat temperature raiser fluctuates between low pressure and high pressure; and
- (d) the heat temperature raising medium absorbs heat at low temperature and release heat at high temperature.

45. An apparatus for transferring heat from a heat source to a heat sink where the temperature of the heat sink is higher than the temperature of the heat source, comprising the steps of:

- (a) formation of heat carrying medium vapor by direct or indirect contact method between the heat carrying medium and the heat source, whereby the temperature of the heat exchange is above the melting point of the material of heat source;
- (b) transferring the heat from the heat carrying medium vapor to the heat temperature raising medium contained within conduit assembly, whereby the conduit is made from one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, (3) a multiple connected conduits or (4) a multi-void block; or conduits with heat conductive fins positioned within one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, (3) a multiple connected conduits, or (4) a multi-void block;
- (c) changing the pressure applied to said heat temperature raising medium from said first pressure to a second pressure;
- (d) transferring heat via the latent heat of fusion from said heat temperature raising medium to the second heat carrying medium to form second heat carrying medium vapor; whereby the temperature of the second heat carrying medium is higher than the temperature of the first heat carrying medium;
- (e) transferring the latent heat of vapor of the second heat carrying medium to the a heat sink where the temperature of the heat sink is higher than the temperature of the heat source.

46. An apparatus for transferring heat from a heat source to a heat sink where the temperature of the heat sink is higher than the temperature of the heat source, comprising the steps of

- (a) formation of heat carrying medium vapor by direct or indirect contact method between the heat carrying medium and the heat source;
- (b) transferring the heat from the heat carrying medium vapor to the heat temperature raising medium contained within conduit assembly, whereby the conduit is made from one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, (3) a multiple connected conduits or (4) a multi-void block; or conduits with heat conductive fins positioned within one of the following type of assembly: (1) a tube, (2) a multiple tube assembly, (3) a multiple connected conduits, or (4) a multi-void block;
- (c) changing the pressure applied to said heat temperature raising medium from said first pressure to a second pressure;
- (d) transferring heat via the latent heat of fusion from said heat temperature raising medium to the second heat carrying medium to form second heat carrying medium vapor; whereby the temperature of the second heat carrying medium is higher than the temperature of the first heat carrying medium;
- (e) transferring the latent heat of vapor of the second heat carrying medium to the a heat sink where the temperature of the heat sink is higher than the temperature of the heat source; whereby the temperature of the heat sink is above the melting point of the material of the heat sink.

47. An apparatus for purification of process substance, comprising the steps of:
- (a) formation of heat carrying medium vapor and solid substance of the process feed by direct or indirect contact method between the heat carrying medium and the heat source;
 - (b) the partially solid process substance from the solidification of the water or the chemical feeds is sent to the washing or separation process for separating the mother liquid and the solid substance; whereby the said process is either by washing or draining method;
 - (c) transferring the heat from a heat source via a vapor of the first heat carrying medium passing through a valve mean to the conduit, whereby the conduit is one of the following type of assembly; (1) tube, (2) a multiple tube assembly, (3) multiple connected conduit assembly, or (4) multi-void block or conduits with heat conductive fins positioned within one of the following type of assembly: (1) tube, (2) a multiple tube assembly, (3) multiple connected conduit assembly, or (4) multi-void block;
 - (d) the heat is further transferred into the heat temperature raising medium inside of the conduit, whereby the heat temperature raising medium to undergoing a phase change from solid to liquid;
 - (e) changing the pressure applied to said heat temperature raising medium from said first pressure to a second pressure;
 - (f) transferring heat via a latent heat of fusion from said heat temperature raising medium out of the conduit to the second heat carrying medium whereby the second heat carrying medium will at least partially vaporize while the heat temperature raising medium will at least partial solidify;

- (g) the second heat carrying medium vapor will pass through another valve mean to transfer the latent heat of the vapor of the second heat carrying medium to the heat sink where the temperature of the heat sink is higher than the temperature of the heat source;
- (h) the washed solid from the washing zone is brought into a direct or indirect contact with the second heat carrying medium, thereby simultaneously condensing the second heat carrying medium and melting the solid process substance.

48. Valve apparatus for the passage of vapor comprising a plurality of gates for one way passage of vapor, wherein the said gates further comprise at least one divider made of screen or mesh for structural support and vapor passages with thin film flaps secured to said divider.

49. An apparatus as claimed in Claim 44, 45, 46, or 47, wherein said apparatus includes valves for providing passages of the first heat carrying medium between the said heat source and said heat temperature raiser and passages for the second heat carrying medium between said heat temperature raiser and the said heat sink.

50. An apparatus as claimed in Claim 48, wherein said valves consist of plurality of gates comprises at least one divider made of screen or mesh for structural support and vapor passages with thin film flaps secured to said divider.

51. An apparatus as claimed in Claim 49, wherein said valves consist of plurality of gates comprises at least one divider made of screen or mesh for structural support and vapor passages with thin film flaps secured to said divider.